WASHINGTON STATE UNIVERSITY
KING COUNTY EXTENSION

Biological Control of Noxious Weeds

Non-native invasive plant species threaten biological diversity, decrease forage and habitat for wildlife and livestock, increase wind and water erosion, and decrease land values throughout Washington. Many years of manual and chemical control are often required to have any impact on large infested areas, which can result in significant expenses for landowners and public agencies.


Photo T. Zimmerman

Biological control offers an inexpensive control method that can provide long-term weed suppression. Biocontrol agents are self-perpetuating and can disperse to new and unknown weed infestations that may be difficult to reach with other control practices. Although it can take agents several years to establish and begin impacting weed infestations, biocontrol is often a highly effective tool and in many cases is the best management option. WSU Extension heads the *Washington State Integrated Noxious Weed Invasive Species Project* (INWISP) aimed at promoting the use of biocontrol agents for invasive plant management. In western Washington, King County Extension is taking the lead to assess and help meet the needs of this region.

Project Goals:

- Establish biocontrol agents and manage them on a statewide scale to suppress noxious weeds.
- Increase public awareness of the benefits and appropriate use of biocontrol as part of an integrated management strategy.
- Foster and expand the westside component of the statewide project by providing biocontrol agents, information and expertise to landmanagers from county, state and federal agencies, conservation organizations, tribes and private and industry landowners.


Bruchidius villosus, a seed-feeding beetle, was released to control Scotch broom in 3 counties in western WA.

Photo E. Coombs, ODA

Agents New to the Western Washington Project

- 8 biocontrol agent species not previously released by the westside project were provided to county weed coordinators, including: *Agapeta zoegana* (spotted knapweed), *Bangasternus fausti* (diffuse knapweed), *Bruchidius villosus* (Scotch broom), *Chrysolina* spp. (St. Johnswort), *Larinus obtusus* (meadow knapweed), *Longitarsus jacobaeae* (tansy ragwort), *Mecinus janthinus* (Dalmatian toadflax) and *Urophora stylata* (bull thistle).
- In 2006, we hope to provide these agents as well as several other new agents for St. Johnswort, spotted and diffuse knapweed, purple loosestrife and Canada thistle.

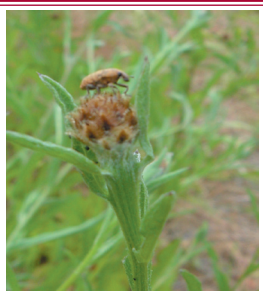
Over 13,000 *Larinus obtusus* were released in western WA.

Photo J. Andreas

2005 Insect Collections and Releases

- 42,820 insects collected in Idaho, Oregon, and eastern WA have been released across 78 sites in western WA.
- Target weeds include: purple loosestrife, St. Johnswort, Scotch broom, bull thistle, Dalmatian toadflax, spotted, diffuse and meadow knapweed and tansy ragwort.
- 12 insect species were released in western WA: *Agapeta zoegana*, *Bangasternus fausti*, *Bruchidius villosus*, *Chrysolina* spp., *Cyphocleonus achates*, *Galerucella* spp., *Larinus minutus*, *L. obtusus*, *Longitarsus jacobaeae*, *Mecinus janthinus* and *Urophora stylata.*
- 17 of the 19 western WA counties have expressed interest in the project as a part of their weed management strategy; we are now actively working with Clallam, Clark, Island, Jefferson, King, Lewis, Mason, Pierce, San Juan, Skamania, Snohomish, Thurston and Whatcom Counties.
- Other participants include: McChord Airforce Base, Columbia Land Trust, Tacoma Power and Washington State Parks.

Education and Public Outreach

- Sponsored Adrianne Peterson of the North American Weed Managers Association Weed-Free Forage Program to speak in May at the Backcountry Horsemen of WA Rendezvous to promote weed-free forage programs and policies in Washington.
- Presented at Weyerhaeuser's Nisqually River Forest Reserve Buyers Workshop in July.
- Biocontrol display was presented at the Skamania County Fair in August.
- Poster presented at the 2005 Western IPM Center Symposium - Water, Wildlife, and Pesticides in the West: Pest Management's Contribution to Solving Environmental Problems in Portland, OR.
- Poster presented in November at the 2005 Washington State Weed Association, Weed Conference in Yakima.
- Published Scotch broom gall article in Forest Stewardship Notes (Fall/Winter 2005).

Enhancing the use of biological control agents for noxious weed management

Project History:

In 1999, a collaboration, led by WSU Ferry County Extension, began between four northeast county noxious weed control boards, Colville Confederated Tribes, and the U.S. Forest Service to expand the use of biocontrol agents in northeast WA to fight invasive weeds. With major funding contributions from the USFS, the *Quad County and Colville Reservation Bioagent Project* was initiated. Since that time, the release of the lesser knapweed flower weevil (*Larinus minutus*) has led to wide-spread suppression of diffuse knapweed (*Centaurea diffusa*). The project's significant success resulted in greater financial support and allowed for an increase in public outreach efforts and, in 2002, expansion westward as INWISP. The statewide project is funded by the USFS, county extension and weed board offices, Colville and Yakima Nation Reservations, WA State Department of Fish & Wildlife, WA Department of Natural Resources, and other collaborators.

Feeding damage caused by *Galerucella* spp. in Pierce County. Purple loosestrife was unable to flower 5 years after insect release. *Photo J. Andreas*

Larinus minutus beetles just released on a spotted knapweed infestation. *Photo K. Ward*

Regional Effort:

In western Washington the target species and the need for biocontrol differ from eastern WA, but the larger project goals remain the same. Biocontrol has been utilized in western WA by county noxious weed control programs for some time, but these efforts have varied greatly and have been limited by a lack of landscape-wide activity. A program coordinator is available to land managers as a resource for biocontrol agents, education and expertise. The project coordinator, hired in March 2005, coordinates insect collections, redistribution, and educational events in the 19 counties of western WA. In addition to the funding support the statewide project has received, both King and Pierce County Noxious Weed Control Boards have contributed for a second season to support the western WA project area.

Scotch broom infestation in Pierce County received a *Bruchidius villosus* release and will serve as an insectary site. *Photo J. Andreas*

Future Plans:

INWISP continues to grow and evolve in western Washington with the needs of the region. Upcoming additions include:

- Establishing insectary sites for future insect collection and redistribution.
- Monitoring key weed species response to released biocontrol agents.
- Expanding the focus of the project to include other integrated weed management techniques, especially in counties with under-funded weed boards.
- Expanding outreach efforts by developing a state-wide project website and educational materials.

For more information on weed biocontrol in western Washington please call 206-205-3135

Tara Zimmerman
Extension Educator
WSU King County Extension

Jennifer Andreas
Program Coordinator
WSU King County Extension

Washington State University Ferry County Extension